

C⁹ --In one aspect, the invention provides a semiconductor sensor which includes a first single crystal silicon wafer layer. A single crystal silicon structure is formed in the first wafer layer. The structure includes two oppositely disposed substantially vertical major surfaces and two oppositely disposed generally horizontal minor surfaces. The aspect ratio of major surface to minor surface is at least 5:1. A carrier which includes a recessed region is secured to the first wafer layer such that said structure is suspended opposite the recessed region.--

In the Claims:

Please amend claim 55 and claims 70-77 as follows.

C¹⁰ 55. A semiconductor micromechanical device comprising:
a first single crystal silicon wafer layer including a recessed region;
a single crystal silicon structure formed in said recessed region of the first layer and including two oppositely disposed substantially vertical major surfaces and including two oppositely disposed generally horizontal minor surfaces wherein the aspect ratio of major surface to minor surface is at least 5:1; and
a carrier secured to said first wafer layer such that said structure is suspended opposite the carrier.

C¹¹ 70. A semiconductor micromechanical device produced by:
providing a first single crystal silicon wafer layer including a recessed region;
providing a carrier;
securing the first wafer layer to the carrier with the recessed region facing the carrier; and
etching substantially vertically through the first wafer layer near the recessed region so as to form a beam integral with the first wafer layer and suspended over the carrier wherein the beam has an aspect ratio of height to width of at least 5:1.

71. The micromechanical device of claim 70 wherein etching includes reactive ion etching.

72. The micromechanical device of claim 70 wherein providing the first wafer layer includes providing a single crystal (100) oriented silicon wafer layer.

73. The micromechanical device of claim 70 wherein etching includes etching substantially vertically through the first wafer layer near the recessed region so as to form multiple beams integral with the first wafer layer and suspended over the recessed region wherein each beam has an aspect ratio of height to width of at least 10:1.

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Cont.

74. A semiconductor micromechanical device produced by:
providing a first single crystal silicon wafer layer including a recessed region;
providing a carrier;
fusion bonding the first wafer layer to the carrier with the recessed region facing the carrier; and
etching substantially vertically through the first wafer layer near the recessed region so as to form a plate integral with the first wafer layer and suspended over the carrier wherein the plate has an aspect ratio of height to width of at least 5:1.

75. The micromechanical device of claim 74 wherein etching includes reactive ion etching.

76. The micromechanical device of claim 74 wherein providing the first wafer layer includes providing a single crystal (100) oriented silicon wafer layer.

77. The micromechanical device of claim 74 wherein etching includes etching substantially vertically through the first wafer layer near the recessed region so as to form multiple plates integrated with the first wafer layer and suspended over the carrier wherein each plate has an aspect ratio of height to width of at least 10:1.

Please add the following new claims 78-89.

--78. The semiconductor micromechanical device of claim 55,

wherein the first silicon layer includes an upper surface including an upper recess and a lower surface including a lower recess that define the recessed region. --

--79. The semiconductor micromechanical device of claim 55,
wherein the carrier comprises a silicon wafer layer.--

--80. The semiconductor micromechanical device of claim 55,
wherein the first silicon layer includes an upper surface including an upper recess and a lower surface including a lower recess that define the recessed region, further including:
an upper silicon layer secured to the upper surface of the first silicon layer opposite the upper recess in the upper surface of the first silicon layer; and
wherein the carrier is secured to the lower surface of the first silicon layer opposite the lower recess of the lower surface of the first silicon layer.--

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--81. The semiconductor micromechanical device of claim 55,
wherein the first silicon layer includes an upper surface including an upper recess and a lower surface including a lower recess that define the recessed region, further including:
an upper silicon layer secured to the upper surface of the first silicon layer opposite the upper recess in the upper surface of the first silicon layer;
wherein the carrier comprises a lower silicon layer; and
wherein the carrier is secured to the lower surface of the first silicon layer opposite the lower recess of the lower surface of the first silicon layer.--

--82. The semiconductor micromechanical device of claim 55,
wherein the aspect ratio of major surface to minor surface of the structure is at least 10:1.--

Figs. 9A
--83. A semiconductor micromechanical device comprising:
a first single crystal silicon layer including an upper surface including an upper recess and a lower surface including a lower recess that define a recessed region;

a single crystal silicon structure formed in the recessed region of the first layer and including two oppositely disposed substantially vertical major surfaces and including two oppositely disposed generally horizontal surfaces wherein the aspect ratio of major surface to minor surface is at least 5:1; and

an upper silicon layer secured to the upper surface of the first silicon layer opposite the upper recess in the upper surface of the first silicon layer; and

a lower silicon layer secured to the lower surface of the first silicon layer opposite the lower recess in the lower surface of the first silicon layer.--

--84. The semiconductor micromechanical device of claim 83,
wherein the upper silicon layer and the first silicon layer are fusion bonded together; and
wherein the lower silicon layer and the first silicon layer are fusion bonded together.--

C12 --85. The semiconductor micromechanical device of claim 83,
wherein the first layer is formed of (100) oriented silicon crystal.--

--86. The semiconductor micromechanical device of claim 83,
wherein the structure is a beam secured at only one thereof to the first layer.--

--87. The semiconductor micromechanical device of claim 83,
wherein the aspect ratio of major surface to minor surface of the structure is at least
10:1.--

--88. The semiconductor micromechanical device of claim 83,
wherein the aspect ratio of major surface to minor surface of the structure is at least
20:1.--

--89. The semiconductor micromechanical device of claim 83,
wherein the structure is a beam secured at only one end thereof to the first layer and
includes a seismic mass at another other end thereof.--